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CLAIMS

1.   In an electronic device having an acoustic echo canceller and being capable of implementing audio applications and at least one of a conferencing application and a telephony application, a background training method for the acoustic echo canceller, the method comprising the step of:

utilizing (650) sound that corresponds to a non-training audio application to train the acoustic echo canceller.

2.   The method of claim 1, wherein the non-training audio application is an application that, at the least, includes audio, and was not designed solely for the purpose of training the acoustic echo canceller.

3.   The method of claim 1, wherein the non-training audio application corresponds to one of a streaming audio, a Moving Picture Experts Group Layer-3 Audio (MP3) playback, a Compact Disk (CD) playback, a Digital Versatile Disk (DVD) playback, a radio program, and a video game having audio associated therewith.

4.   The method of claim 1, wherein the electronic device is one of a personal computer, a portable computing device, and an advanced multipurpose phone.

5.   The method of claim 1, wherein said utilizing step comprises the step of performing (536) sample rate conversion to match a sample rate of the non-training

audio application with the sample rate of the one of the conferencing application and the telephony application.

6.The method of claim 1, wherein the electronic device includes at least one microphone and at least one speaker, the acoustic echo canceller includes an adaptive filter, a first path is formed from the at least one speaker to the adaptive filter and a second path is formed from the at least one microphone to the adaptive filter, and said utilizing step comprises the step of matching (532) a delay of the first path with a delay of the second path.

7.The method of claim 1, wherein said electronic device includes at least one processor, and said utilizing step further comprises the step of minimizing (610) use of the at least one processor when a current load of the at least one processor is above a given processor load threshold.

8.The method of claim 7, wherein the electronic device includes at least one microphone and at least one speaker, and said acoustic echo canceller includes an adaptive filter, and said minimizing step comprises the steps of collecting (655) audio data samples from at least one of the at least one microphone and the at least one speaker but restricting use of the adaptive filter until the current load of the at least one processor is below the given processor load threshold.

9.The method of claim 8, wherein said restricting step comprises the steps of:

utilizing (615) a counter to count a number of training calls to the acoustic echo canceller; and

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training (630) the adaptive filter only when the number of training calls is greater than a pre-specified adaptive filter comparison threshold.

10.The method of claim 1, wherein the sound that corresponds to the non-training audio application is a notification of a pre-specified event unrelated to training of the acoustic echo canceller.

11.   The method of claim 10, wherein the pre-specified event is one an incoming call, an incoming e-mail message, an upcoming conference, an upcoming meeting, an error, a warning, a request for an input.

12.   An acoustic echo canceller for use in an electronic device that is capable of implementing audio applications and at least one of a conferencing application and a telephony application, the acoustic echo canceller comprising:

        an adaptive filter (516) adapted to be trained using sound that corresponds to a non-training audio application.

13.   The acoustic echo canceller of claim 12, wherein the non-training audio application is an application that, at the least, includes audio, and was not designed solely for the purpose of training the acoustic echo canceller.

14.   The acoustic echo canceller of claim 12, wherein the non-training audio application corresponds to one of a streaming audio, a Moving Picture Experts Group Layer-3 Audio (MP3) playback, a Compact Disk (CD) playback, a Digital Versatile

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Disk (DVD) playback, a radio program, and a video game having audio associated therewith.

15.   The acoustic echo canceller of claim 12, wherein the electronic device is one of a personal computer, a portable computing device, and an advanced multipurpose phone.

16.   The acoustic echo canceller of claim 12, further comprising at least one sample rate conversion device (536) for performing sample rate conversion to match a sample rate of the non-training audio application with the sample rate of the one of the conferencing application and the telephony application.

17.The acoustic echo canceller of claim 12, wherein the electronic device includes at least one microphone and at least one speaker, a first path is formed from the at least one speaker to the adaptive filter and a second path is formed from the at least one microphone to the adaptive filter, and the acoustic echo canceller further comprises at least one delay matching buffer (532) for matching a delay of the first path with a delay of the second path.

18.The acoustic echo canceller of claim 12, wherein said electronic device includes at least one processor, and the acoustic echo canceller further comprises means for minimizing use of the at least one processor when a current load of the at least one processor is above a given processor load threshold.

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19.The acoustic echo canceller of claim 18, wherein the electronic device includes at least one microphone and at least one speaker, the acoustic echo canceller further comprises:

means for collecting audio data samples from at least one of the at least one
5   microphone and the at least one speaker; and

means for restricting use of the adaptive filter until the current load of the at least one processor is below the given processor load threshold.

20.The acoustic echo canceller of claim 19, wherein said means for restricting
10   comprises:

a counter (854) for counting a number of training calls to the acoustic echo canceller;

a comparator (620) for comparing the number of training calls to a pre-specified adaptive filter comparison threshold, and

15   wherein the adaptive filter is trained only when the number of training calls is greater than the pre-specified adaptive filter comparison threshold.

21.The acoustic echo canceller of claim 12, wherein the sound that corresponds to the non-training audio application is a notification of a pre-specified
20   event unrelated to training of the acoustic echo canceller.

22.   The acoustic echo canceller of claim 21, wherein the pre-specified event is one an incoming call, an incoming e-mail message, an upcoming conference, an upcoming meeting, an error, a warning, a request for an input.

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23.   A background training method for an acoustic echo canceller included in a peripheral device, the peripheral device capable of implementing audio applications and further including at least one of a Universal Serial Bus (USB) interface and a IEEE 1394 interface for connecting to a computer capable of

5   implementing at least one of a conferencing application and a telephony application, the method comprising the step of:

        receiving sound from the computer via at least one of the USB interface and the IEEE 1394 interface, the sound corresponding to a non-training audio application;

        utilizing the sound that corresponds to the non-training audio application to

10   train the acoustic echo canceller in the peripheral device; and

        performing echo canceling, during at least one of the conferencing application and the telephony application implemented by the computer, using the acoustic echo canceller in the peripheral device.

15   24.   The method of claim 23, wherein the non-training audio application is an application that, at the least, includes audio, and was not designed solely for the purpose of training the acoustic echo canceller.

       26.The method of claim 23, wherein the sound that corresponds to the non-

20   training audio application is a notification of a pre-specified event unrelated to training of the acoustic echo canceller.

27.   The method of claim 26, wherein the pre-specified event is one an incoming call, an incoming e-mail message, an upcoming conference, an upcoming

25   meeting, an error, a warning, a request for an input.